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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,132	06/25/2003	Alireza Gharavi	29634/38405-A	4017
4743	7590	03/21/2005	EXAMINER ULLAH, AKM E	
MARSHALL, GERSTEIN & BORUN LLP 6300 SEARS TOWER 233 S. WACKER DRIVE CHICAGO, IL 60606			ART UNIT 2874	

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/606,132	<b>Applicant(s)</b> GHARAVI, ALIREZA	
	<b>Examiner</b> Akm Enayet Ullah	<b>Art Unit</b> 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/29/2003</u> . | 6) <input type="checkbox"/> Other: ____.  |

### ***Detailed Action***

Applicant cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Status of the Application***

Claims 1- 24 are pending in this application.

If applicant is aware of any prior art or any other co- pending application not already of record, he/she is reminded of his/her duty under 37 CFR 1.56 to disclose the same.

If applicant provides prior art, he/she is requested to cite it on form PTO-1449 in accordance with the guideline set forth in MPEP 609.

### ***Claim Rejections - 35 USC § 102***

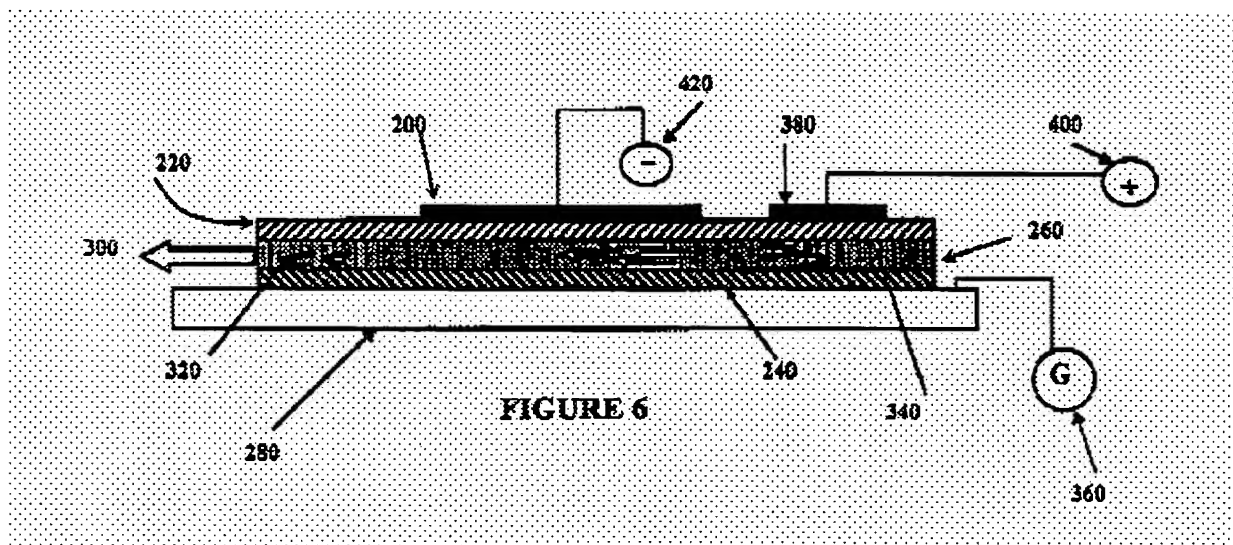
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 - 5 and 7- 24 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Gharavi (USP NO. 6,665,479).

Regarding claims 1 and 20, Gharavi ('479) discloses an optical device comprising:



*Reproduced From USPNO. 6,665,479*

(a) a waveguide layer that includes a waveguide (260) comprised of a second-order nonlinear optical polymer and at least a first and second grating (320 and 340)

(b) a means for communicating a negative electric field (420) to the first grating (320)

© a means for communicating a positive electric field (400) to the second grating (340)

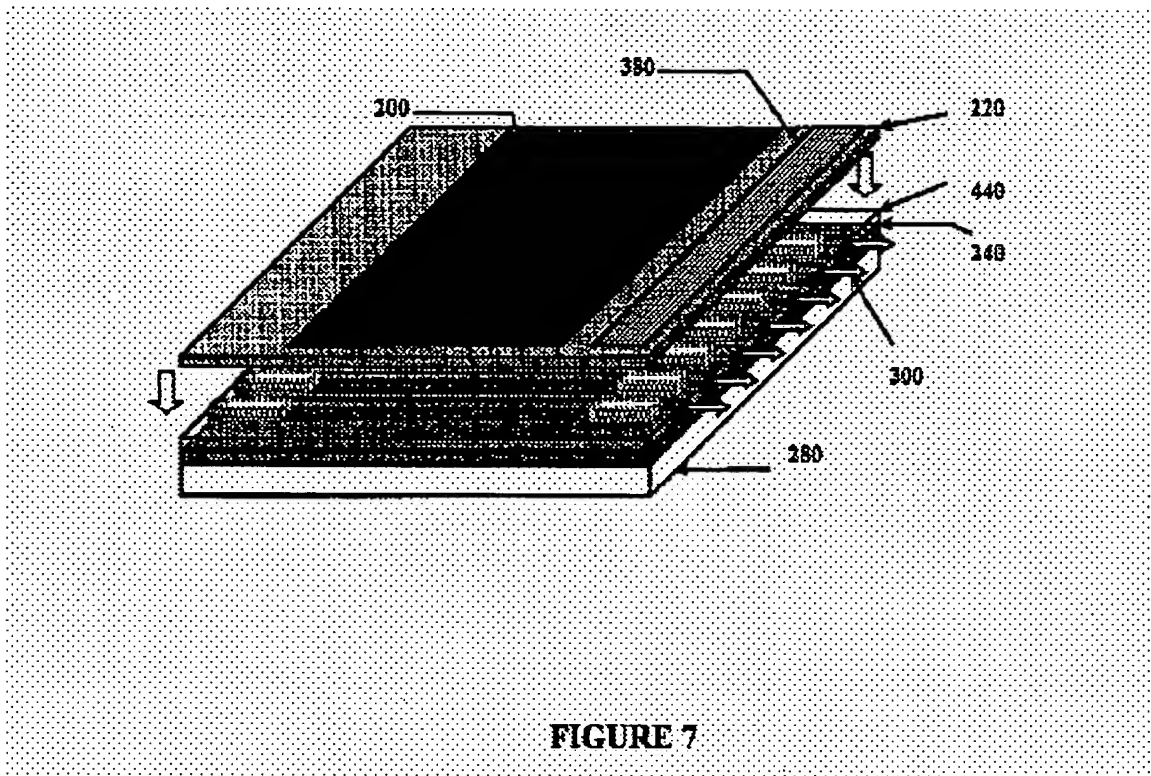
Art Unit: 2874

Regarding claims 2 and 21, 23 -24, Gharavi ("479) discloses an optical device comprising:

(a) a waveguide layer that includes a waveguide (260) comprised of a second-order nonlinear optical polymer and at least a first and second grating (320 and 340):

(b) a first electrode (200) positioned so as to communicate a negative electric field (420) to first grating (320) upon application of a negative voltage to first electrode (200)

© b) a second electrode (380) positioned so as to communicate a positive electric field (400) to second grating (340) upon application of a positive voltage (400) to second electrode (380).



*Reproduced From USPN. 6,665,479*

Regarding claim 3, device comprises one or more cladding layers shows in column 27, second and third layers and also described in column 8, second paragraph of the reference.

Regarding claim 4, wherein device further comprises a substrate layer shows in figures 5 and 7.

Regarding claim 6, wherein device is an optical modulator shows in column 28 of the reference.

Regarding claim 7, wherein one of gratings is tunable shows in column 29 of the reference.

Regarding claim 8, wherein both of gratings are tunable shows in column 29 of the reference.

Regarding claim 9, wherein said one of gratings is comprised of an optical nonlinear second-order polymer shows in column 29 of the reference.

Regarding claim 10, wherein both of said gratings is comprised of an optical nonlinear second-order polymer shows in column 29 of the reference.

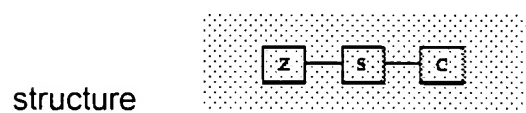
Regarding claim 11, wherein at least one of said gratings is comprised of a nonlinear second-order polymer that is the same as said polymer that comprises said waveguide.

Regarding claim 12, wherein at least one of said gratings is comprised of an nonlinear second-order polymer that is different than said polymer that comprises said waveguide.

Regarding claim 13, which further comprises a ground shows in figure 6.

Regarding claim 14, wherein said optical nonlinear second-order polymer is selected from the group consisting of modified polyimide-hydroxy-diazo-sulfone, polyimide-amine-azo-nitro and polyimide-amine-diazodinitro described in column 6, last paragraph.

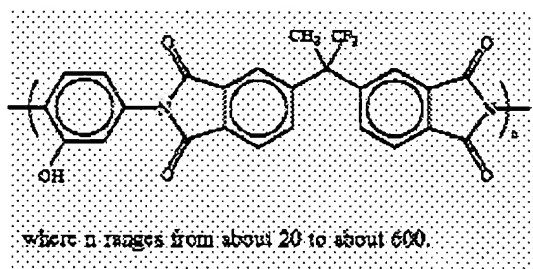
Regarding claim 15, wherein said optical nonlinear second-order polymer has the



teaches in column 19 of the reference.

Wherein Z is a polymer backbone, S is a spacer attached to Z, and C is an azo or stilbene chromophore

Regarding claim 16, wherein Z is



Wherein n ranges from about 20 to about 600 shows in column 33 of the reference.



Regarding claim 17, wherein S is a carbon chain comprising from 0 to 30 atoms shows in column 34 of the reference.

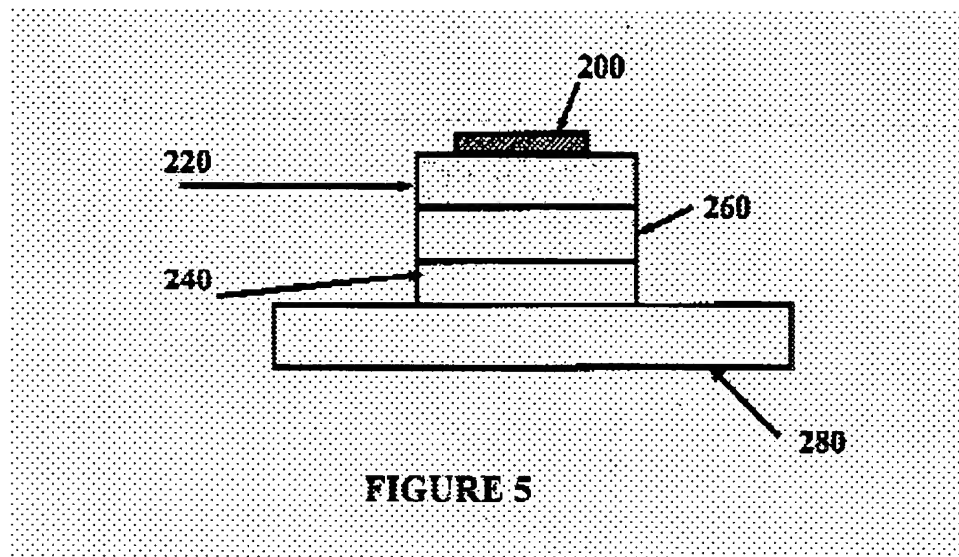
Regarding claim 18, wherein C is dialkyl-amino-sulfone-stilbene shows in column 34 of the reference.

Regarding claims 19 and 22, Gharavi ("479) discloses an optical device comprising:

(a) a waveguide layer that includes a waveguide (260) comprised of a second-order nonlinear optical polymer and at least a first and second grating (320 and 340):

(b) a first electrode (200) positioned so as to communicate a negative electric field (420) to first grating (320) upon application of a negative voltage to first electrode (200)

© b) a second electrode (380) positioned so as to communicate a positive electric field (400) to second grating (340) upon application of a positive voltage to second electrode (380).



*Reproduced from USPN 6,665,479*

(d) a substrate layer shows in figures 5 and 7

(e) a first cladding layer positioned between said first and second electrodes and said waveguide layer mentioned in columns 3 and 8, and

(f) a second cladding layer positioned between said waveguide layer and said substrate layer mentioned columns 3 and 8.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gharavi (USPNO. 6665479) in view of Chan et al (USPNO. 6,091,879).**

Gharavi reference explained in details in above rejection.

Gharavi fails to mentioned that the device is an optical modulator as claimed in claim 5.

The use of such device as a modulator is very elementary teachings in this art as is shown by Chan et al.

Chan et al is the evidence that ordinary skill in the art would find a reason, suggestion or motivation to have the device a modulator as claimed in the optical device.

One of ordinary skill in the art would have found it obvious to use the optical device as a modulator of Chan et al in Gharavi since, lines 20- 25, mentioned that constructing both passive and active optical waveguide systems for use in optical devices, such as optical modulators, filters, amplifiers, attenuators, frequency converters and electric field sensors, among others in order to achieve a variable optical attenuators and modulators. It is noted that applicant has not described such (modulators) as being critical or yielding unexpected benefits. Certainly a person of ordinary skill in the art would find it beneficial to achieve a modulator from the optical device if desired.

### ***Cited Relevant Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gharavi'942, Kawawada et al (2002/0048073), Bintz et al., Chan et al'120, Grote'116, and Dörn et al'492 are also cited to show a typical optical device having second order nonlinear optical polymer for the use of an attenuator and modulator respectively.

### ***Contact Information***

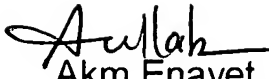
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akm Enayet Ullah whose telephone number is 571-272-2361. The examiners can normally be reached on Monday through Wednesday from 5:30 am to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick, can be reached on Monday through Friday whose telephone number is 571-272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/606,132  
Art Unit: 2874

Page 13

  
Akm Enayet Ullah  
Primary Examiner  
Art Unit 2874

*Aullah*  
*March 09, 2005*